

ProudBs [$n_$, 0] := {**BR** [n , {}]};

ProudBs [$n_$, 1] := **BR** [n , {#}] & /@ (Range [$n - 1$] U (-Range [$n - 1$]));

ProudBs [$n_$, $m_$] /; $m > 1$:=

Flatten [**ProudBs** [n , $m - 1$] /.

BR [n , { σ ___, $\sigma_$ }] \Rightarrow (**BR** [n , { σ , σ , #}] & /@ **PF** [n , σ])]